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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,095	02/19/2004	Anuj Batra	TI-36097	4758
23494	7590	02/22/2008	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			AHN, SAM K.	
			ART UNIT	PAPER NUMBER
			2611	
			NOTIFICATION DATE	DELIVERY MODE
			02/22/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com  
uspto@dlmail.itg.ti.com

<b>Office Action Summary</b>	Application No. 10/782,095	Applicant(s) BATRA ET AL.	
	Examiner Sam K. Ahn	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see p.18, filed 11/29/07, with respect to the rejection(s) of claim(s) 1-3 and 29 under 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sorrells et al. US 7,054,296 B1 (Sorrells).

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-38 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in 101.

In this case, claims 1,4 and 34 merely recites a sequence of a preamble signal, which is nothing but the physical characteristics of a form of energy, thus is directed to non-statutory subject matter.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Sorrells et al. US 7,054,296 B1 (Sorrells).

Regarding claim 1, Sorrells teaches a preamble for a wireless communications system, the preamble comprising a sequence wherein the sequence comprises a concatenation of a first set of sub-sequences with each sub-sequence containing a specified number of zeroes, and wherein each sub-sequence can differ depending upon its position in the preamble (note col.119, lines 45-57 of long preamble SYNC of 01101100, hence having more than one zeroes and short preamble SYNC of 00011010, also having more than one zeroes). The recitation in the preamble is not given patentable weight since the recitation recites the

intended use of a structure and the body of claim does not depend on the preamble for completeness and the bodily limitations are able to stand alone.

Regarding claim 2, Sorrells further teaches wherein the sub-sequences may be specified in the time domain (see Figs. 72A-72E of sequences in time domain).

Regarding claim 3, Sorrells further teaches a second sequence (short training symbols) wherein the second sequence comprises a concatenation of a second set of sub-sequences wherein the second set of sub-sequences can differ from the first set of sub-sequences (note col.119, lines 45-57 of long preamble SYNC of 01101100, hence having more than one zeroes and short preamble SYNC of 00011010, also having more than one zeroes).

Regarding claim 29, Sorrells further teaches wherein the communication system implements OFDM (note col.58, line 57).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 30-33 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorrells et al. US 7,054,296 B1 (Sorrells) in view of Kaku et al. US 2003/0007190 A1 (Kaku).

Regarding claim 30, Sorrells teaches all subject matter claimed, as applied to claim 29. And although Sorrells teaches the OFDM system, does not further teach a time frequency interleaved, OFDM system.

Kaku teaches an OFDM system wherein the transmitter of the system further performs time frequency interleaving (see 104 in Fig.1) and suggests that this results in a two-dimensional interleaving (further see Figs.15A and 15B), hence as illustrated in Fig.15B the interleaving level has increased, resulting in the two-dimensional interleaving (note paragraph 0093). Kaku also suggests that interleaving in the OFDM system is well-known to an artisan (note paragraph 0010). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Kaku in the system of Sorrells by implementing interleaving, the time frequency interleaving, in the transmitter of Sorrells for the purpose of performing a two-dimensional interleaving (note paragraph 0093).

Regarding claim 31, Sorrells further teaches transforming the signal that includes the preamble received by the receiver wherein the received signal is provided to inverse Fast Fourier Transform (note paragraph 0018). However, Sorrells does

not explicitly teach wherein the signal including the preamble is transformed prior to transmission.

Kaku teaches an OFDM system wherein the signal in the transmitter is transformed (from element 4 through element 8 in Fig.12 transforming to time domain, removing or filtering of zero point and interleaving).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Kaku in the system of Sorrells by implementing the two-dimensional interleaving for the purpose of performing a two-dimensional interleaving (note paragraph 0093).

Regarding claim 32, Kaku further teaches time-domain filtering (5 in Fig.12, removing or filtering of zero point in time domain, as it receives output of IFFT).

Regarding claim 33, Kaku further teaches the transformation comprises a first domain conversion (element 4 in Fig.12), processing the domain converted preamble (Sorrells in view of Kaku teaches the signal comprises the preamble, processing the signal in elements 5-7) and a second domain conversion (element 8).

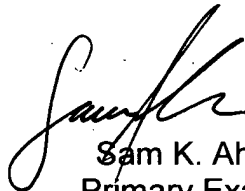
Regarding claim 38, Kaku further teaches wherein the signal having the preamble, as previously explained, can be transformed prior to use and stored in

a memory (wherein the transformation of elements 4-8 in Fig.13 is implemented prior to Data stock 34 in Fig.13 of a buffer memory, note paragraph 0084).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sam K. Ahn  
Primary Examiner

02/19/08